Safety Data Sheet

1. Identification of the Substance/Mixture and the Supplier

Supplier	:	National Institute of Advanced Industrial Science and Technology (AIST)
Address	:	1-3-1 Kasumigaseki, Chiyoda, Tokyo, Japan
Office in Charge	:	Reference Materials Office, Center for Quality Management of Metrology, National Metrology Institute of Japan
Person in Charge	:	Certified Reference Material Staff
Telephone No.	:	+81-29-861-4059 Fax No. : +81-29-861-4009
Emergency Contact	:	Same as above
		Prepared on : August 29, 2007
		Revised on : May 26, 2020
		ID Number : 8115001
Identity of Substance/Mixture	:	Certified reference material: NMIJ CRM 8115-a ABS Resin Disk for Heavy Metal Analysis
	:	(Heavy metals (Cd, Cr, Hg, Pb) in ABS resin - low concentration disk)
Recommended Use of the Chemical and Restriction on Use	:	This reference material can be used to control the precision of analysis or to confirm the validity of analytical methods or instruments during the X-ray fluorescence analysis of Cd, Cr, Hg and Pb in ABS resin or similar polymers. Do not use this reference material for other purposes than testing/research.

2. Hazards Identification

GHS Classification	:	Not applicable
GHS Label Element	:	Not applicable
Hazard and toxicity	:	－
Other hazard and toxicity	:	Decabrominated diphenyl ether (DBDE) is contained. (Class 1 Specified Chemical Substances No.33)
Precautionary Statement	:	［Precaution］ This reference material is toxic when it is ingested. ［Action］ Make the person drink plenty of water to induce vomiting. Seek medical examination/ treatment. ［Storage］ Store in clean environment at 15 °C to 35 °C, and avoid direct sunlight. Store in a locked area. ［Disposal］ This CRM contains the class I specified chemicals, therefore handle this CRM in accordance with Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. and Wastes Disposal and Public Cleansing Act.

Hazards not mentioned above are either not classifiable or not applicable.

3. Composition/Information on Ingredients

Substance/Mixture : Mixture

Ingredient 1

Chemical name	:	Acrylonitrile-Butadiene-Styrene copolymer
Synonym	:	ABS resin
Chemical formula	:	$(C_8H_8\text{-}C_4H_6\text{-}C_3H_3N)_x$
Molecular weight	:	-
CAS number	:	9003-56-9
Content	:	Over 99 %
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (6)-176 Industrial Safety and Health Act : Published

Ingredient 2

Chemical name	:	Cadmium oxide
Synonym	:	-
Chemical formula	:	CdO
Molecular weight	:	128.41
CAS number	:	1306-19-0
Content	:	Approximately 11 mg/kg (Approximately 9.3 mg/kg (as Cd))
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (1)-202 Industrial Safety and Health Act : Published

Ingredient 3

Chemical name	:	Lead (II) chromate
Synonym	:	Chrome yellow
Chemical formula	:	$PbCrO_4$
Molecular weight	:	323.2
CAS number	:	7758-97-6
Content	:	Approximately 0.015 % (Approximately 24 mg/kg (as Cr), 94 mg/kg (as Pb))
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (1)-286 Industrial Safety and Health Act : Published

Ingredient 4

Chemical name	:	Mercury sulfide(II)
Synonym	:	-
Chemical formula	:	HgS
Molecular weight	:	232.66

CAS number	:	1344-48-5
Content	:	Approximately 0.011 % （93.81 mg/kg（as Hg))
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (1)-438 Industrial Safety and Health Act : Published

Ingredient 5

Chemical name	:	Chromium(III) acetylacetonate
Synonym	:	Acetylacetone Chromium(III) Salt
Chemical formula	:	$C_{15}H_{21}CrO_6$
Molecular weight	:	349.32
CAS number	:	21679-31-2
Content	:	Approximately 0.047 % （70.6 mg/kg（as Cr))
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (2)-2142 Industrial Safety and Health Act : Published

Ingredient 6

Chemical name	:	Decabrominated diphenyl ether
Synonym	:	DBDE, Deca-bromo-diphenyl ether
Chemical formula	:	$C_{12}Br_{10}O$
Molecular weight	:	959.17
CAS number	:	1163-19-5
Content	:	360 mg/kg
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (3)-2846 Industrial Safety and Health Act : Published

4. First-aid Measures

◇Eye Contact
1. Irrigate eyes thoroughly with clean water.
2. Seek medical examination/ treatment.

◇Skin Contact
1. Flush exposed skin area thoroughly with clean water.
2. Take off contaminated clothing, shoes, etc. Seek medical examination/ treatment.

◇Ingestion
1. Flush mouth thoroughly with water.
2. Seek medical attention.

◇Inhalation
1. Move the person to fresh air and keep him/her at rest and warm.

◇Measures to be taken to protect the person applying first aid
Use personal protective equipment.

5. Fire-fighting Measures

Extinguishing Media	:	Water spray, CO_2, dry-chemical-power-type extinguisher, alcohol resistance, polymer foam
Fire-Specific Hazards	:	Carry out fire-fighting from the windward as much as possible in order to avoid inhalation of hazardous gases such as CO, NOx

		and CN contained in combustion gas.
Specific Fire-Fighting Method	:	Eliminate combustion sources at the origin of a fire and put out fire by using extinguishing media. Move movable containers immediately to a safe place. In the case of immovable containers, cool their surroundings with sprayed water. Carry out fire-fighting from the windward in order to avoid inhalation of hazardous gases.
Protection of Fire-Fighters	:	Protection clothing, air breathing apparatus, compressed oxygen closed-circuit self-contained breathing apparatus, and rubber boots

6. Accidental Release Measures

Personal Precaution	:	Immediately remove potential ignition sources from surrounding areas. Make fire-extinguishing tools available to prepare for fire ignition.
Personal Protective Equipment and Emergency Procedures	:	Use appropriate personal protective equipment during the operation to avoid skin contact of splash etc.
Environmental Precautions	:	Take precautions to prevent the spilled ABS resin disk from draining into rivers etc. to adversely impact the environment. Make it sure to appropriately treat contaminated wastewater in order to prevent untreated wastewater from being released into the surrounding environment.
Recovery and Neutralization	:	Collect spilled ABS resin disk in empty containers, and thoroughly wipe out residual ABS resin disk.
Secondary Disaster Prevention Measures	:	-

7. Handling and Storage

Handling

- Avoid contact with eyes, skin and clothing.
- Avoid drinking, eating and smoking when handling this reference material.
- Perform thorough cleaning after handling this reference material.

Storage

- Use brown glass bottles. Keep this reference material away from direct sunlight and store it in a clean environment at 15 °C to 35 °C.
- Lock and store strictly.

8. Exposure Controls/Personal Protection

Precaution for Safety Management

Not specified

Permissible Concentration (Cadmium oxide)

• ACGIH TLV-TWA (in 2000)	:	0.01 mg/m^3 (Total dust/Particulate as Cd)
	:	0.002 mg/m^3 (Respirable dust as Cd)
• Value recommended by Japan Society for Occupational Health (in 1998)	:	0.05 mg/m^3 (as Cd)
• OSHA PEL TWA	:	0.2 mg/m^3 (as Cd)

Permissible Concentration (Lead chromate)

• ACGIH TLV-TWA (in 2000)	:	0.05 mg/m^3 (as Pb)
	:	0.012 mg/m^3 (as Cr)

・Value recommended by Japan Society for Occupational Health (in 1998) : 0.1 mg/m^3 (as Pb)
: 0.05 mg/m^3 (as Cr)

Permissible Concentration (Mercury Sulfide)

・ACGIH TLV-TWA (in 2001) : 0.025mg/m^3 (as Hg)
・Value recommended by Japan Society for Occupational Health (in 2001) : 0.025mg/m^3 (as Hg)

Permissible Concentration (Decabrominated diphenyl ether (DBDE))

・Not established

Engineering Controls

◇Precautions for Storage

・Keep this reference material away from direct sunlight at room temperature.

Personal Protective Equipment (PPE)

PPE for Respiratory System	: -
PPE for Hands	: Protective gloves
PPE for Eyes	: Eye protector
PPE for Skin and Body	: Protective clothing

9. Physical and Chemical Properties

・Appearance, etc.	: Solid
・Color	: Yellow
・Odor	: No data
・pH	: No data
・Melting point	: No data
・Boiling point	: No data
・Flashing point	: No data
・Explosive range	: No data
・Vapor pressure	: No data
・Relative vapor density(Air=1)	: No data
・Specific gravity or bulk specific gravity	: No data
・Solubility	: No data
・*n*-Octanol/water partition coefficient (Log Po/w)	: No data
・Auto-ignition temperature	: No data

10. Stability and Reactivity

◇Stability

1. Stable when being stored and handled in normal conditions

◇Reactivity

1. May generate NOx, CN, etc. through pyrolysis

◇Conditions to Avoid

1. Sunlight and heat

◇Hazardous Decomposition Products

1. Carbon monoxide

11. Toxicological Information

Acute Toxicity

Oral (Cadmium oxide)
Mouse LD50:72 mg/kg; Rat LD50:72 mg/kg
Oral (Lead chromate)
Mouse LD50:>12 g/kg
Oral (Mercury sulfide)
No data available

12. Ecological Information

Persistance and Degradability

・Not degradable by microorganism etc. (Cadmium oxide)
・Not degradable by microorganism etc. 1 % to 3 % (by BOD); Carp 58 to 144 times (2 mg / L)

Bioaccumulative Potential

・Bioconcentration or bioaccumulation in fish and shellfish is considered nil or low. Considered not highly bioconcentrative (Cadmium oxide)

Ecotoxicity

・No data available

13. Disposal Considerations

Residual Waste	:	・This standard substance contains decabrominated diphenyl ether and should be handled appropriately, taking into account that it is Class I Specified Chemical Substance of the Law Concerning the Examination and Regulation of Manufacture, etc. ・It corresponds to industrial waste and waste plastics of "Waste Disposal and Public Cleaning Law" (Waste Disposal Law). In accordance with the waste disposal method, Disposal of this reference material should be entrusted to a professional waste disposal company licensed by a prefectural governor.
Contaminated Container and Package	:	Dispose of this CRM in accordance with applicable legislation and local government ordinance. Entrust disposal of this CRM to a professional waste disposal company licensed by the prefectural governor.

14. Transport Information

UN Number	:	Not applicable
UN Classification	:	-
UN Proper Shipping Name	:	-
ICAO/IATA	:	Not applicable
Marine Pollutant	:	Not applicable
Precautions	:	Transport this reference material carefully while keeping it away from direct sunlight and paying due attention to leakage and fire due to falling and overturning.

15. Regulatory Information

◇Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Chemical Substances Control Law)

· Type 1 Specific Compound (Decabrominated diphenyl ether, No. 33)

◇ Act on grasping emission amount of specified chemical substances to the environment and promoting improvement of management

· Class I designated chemical substances (Decabrominated diphenyl ether, No. 1 - 255)

This SDS is originally prepared for the use of the material in Japan, thus the stated laws and regulations are stipulated and carried out in Japan. The use of the material in other countries should be referred to and by application of the relevant laws and regulations of the country in which the material will be used.

16. Other Information

Others

The information in this document is not intended to be exhaustive and is based on currently available information and data. The measures given in this document are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety measures appropriate to each specific application and context of use. This document is intended to provide information and not intended to guarantee anything in handling this reference material.